इंटरनेट मानक

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IS 12401 (1988): Code of practice for selection of mechanical vibrating feeders [MED 6: Continuous Bulk Conveying, Elevating, Hoisting Aerial Ropeways and Related Equipment]

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IS : 12401 - 1988

(Reaffirmed 1998)

Indian Standard

CODE OF PRACTICE FOR SELECTION OF MECHANICAL VIBRATING FEEDER

1. Scope — Covers the general requirements of practice followed for the selection of mechanical vibrating feeder.

2. Selection Criterion — Generally the following influence the selection of a feeder:

- a) Material, its bulk density, largest lump size and moisture content;
- b) Sieve analysis (approximate value may also be helpful);
- c) Capacity in tonnes per hour;
- d) Angle of repose of material;
- e) Layout of hopper; and
- f) Ambient temperature.

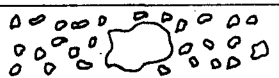
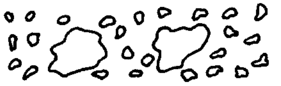
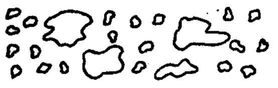
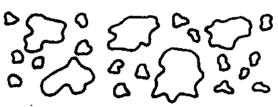
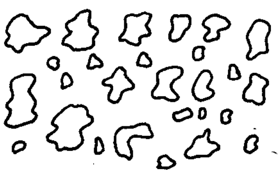
3. Size of Feeder — Size of feeder depends, mainly, upon the velocity of material on feed pan (*capacity in tonnes per hour*). The velocity is used to determine the width of the feeder and the depth of the bed of material on the trough for a given capacity in tonnes per hour of a material of given density.

3.1 *Width*

3.1.1 Consider the anticipated material breakdown and select minimum width related to material size. An illustration is given in Table 1. Then use the appropriate width factor and multiply by largest dimension of largest piece to select tentative minimum width.

TABLE 1 SELECTION OF FACTORS FOR MECHANICAL VIBRATING FEEDER

(*Clauses* 3.1.1 *and* 8.4)

*AMOUNT OF MATERIAL OF LARGE SIZE,%	REPRESENTATIVE SIEVE ANALYSIS	FEEDER WIDTH FACTOR	HOPPER THROAT OPENING FACTOR
0 UP TO 10		1	1.5
OVER 10 UP TO 40		1.5	2
OVER 40 UP TO 60		2	2.5
OVER 60 UP TO 80		2.5	3
OVER 80 UP TO 100 (SAY 95 % SIZED MATERIAL)		3	3.5

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

Conveyors, Vertical Hoists and Bucket Elevators Sectional Committee, EDC 61; Feeders Subcommittee, EDC 61 : 9 [Ref : Doc : EDC 61 (4880)]

3.1.1.1 Hopper throat opening factor shall be multiplied with the largest dimension of largest piece to select tentative hopper throat opening.

3.1.2 Consider the minimum width required related to capacity in tonnes per hour with due consideration to stroke length and speed (rev/min) of the feeder. An illustration is given in Table 2.

TABLE 2 FEEDER CAPACITY ILLUSTRATION

(*Clauses* 3.1.2 *and* 3.3.1)

Capacities in tonnes per hour.

Nominal Width (mm)	*Slope of Pan*			
	0°	5°	10°	15°
915	315	365	457	599
1 220	416	487	609	792
1 525	528	609	762	985
1 830	630	731	914	1 178

Note 1 — The illustration in Table 2 is based on the following data of feeder:

Angle of throw = 45°
Stroke = 9·52 mm
Speed = 800 rev/min
Depth of bed = 305 mm
Density of material = 1·6 t/m³

Note 2 – For grizzly feeders minimum stroke of 13 mm may be used and for 13 mm, stroke capacities in Table 2 may be increased by 20 percent.

3.1.3 The width to be adopted shall have the value larger of the two widths obtained in **3.1.1** and **3.1.2**. However, maximum width may be limited by the considerations such as material/unit being fed, that is, belt crusher, space limitations, hopper layout, etc.

3.2 *Length*

3.2.1 For choosing the length, select shortest length required for conveying distance. Length selected shall not be shorter than is required to retain the angle of repose on the feeder pan, when feeder is shut down.

3.3 *Slope*

3.3.1 For choosing the slope, select it to suit the capacity in tonnes per hour (*see* **3.1.2**) and length requirements to retain the angle of repose. An illustration is given in Table 2.

3.4 A sketch, preferable to scale, may aid to select the parameters. Where a four sided hopper is used, Table 1 may be helpful (for illustration only) to determine hopper throat opening. A schematic diagram for illustration is given as Fig. 1.

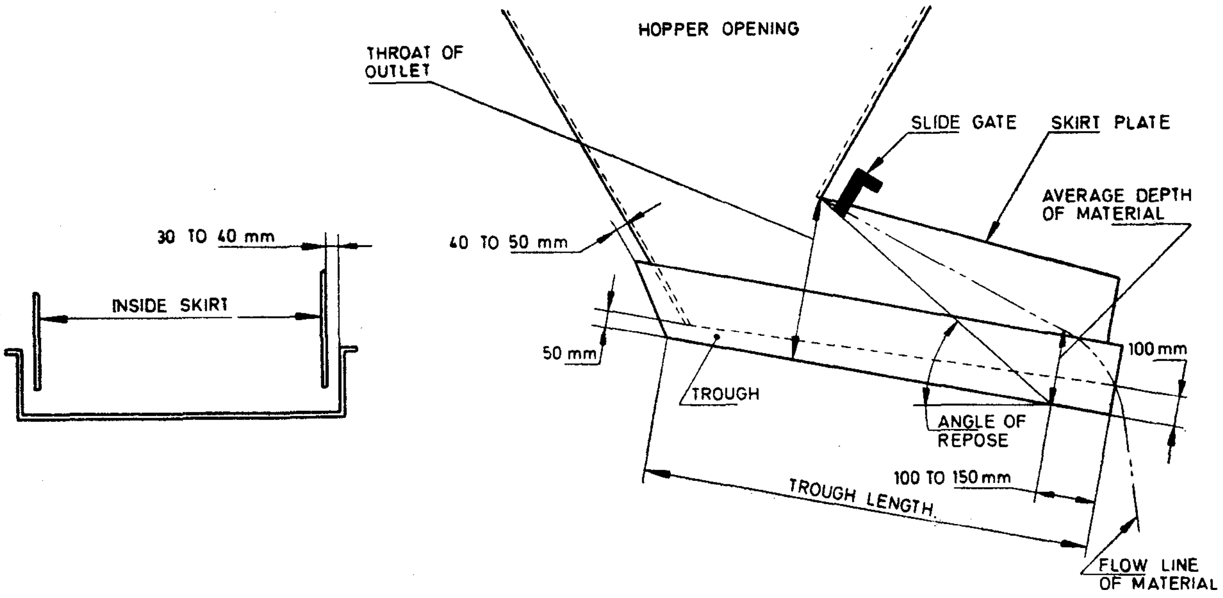

FIG. 1 FLOW LINE DIAGRAM OF MATERIAL

EXPLANATORY NOTE

This Indian Standard may provide a uniform practice for selection of mechanical vibrating feeders. The information given in this standard may be useful to the manufacturers in deciding the various parameters of the feeder and to the users in selection of feeder(s) for their specific requirement(s).

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